Raw materials and additives
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Multifunctional filler material

A wheat fiber creates new opportunities

A wheat fiber can now be used as filler material, which fulfils additional functions as an alternative to conventional products.

Various reports on nutrition have recently emphasized that today's nutrition generally provides too much energy and also contains an excessive portion of fat, sugar, alcohol and animal protein. As a result, the consumers became more aware of a balanced and healthier diet (1).

Manufacturers of food reacted to the changed consumer awareness by increasingly using substances without any nutritional value – so-called fillers – to regulate the excessive supply of fats and carbohydrates (2).

Ideally, fillers cause a long lasting feeling of saturation, wherein they are not broken down or only to a small extent in the digestive tract to absorbable substances.

Requirements
The fillers that are important are besides air and water mainly dietary fibers such as cellulose, carbohydrate derivatives as well as various thickening agents. The following criteria are decisive for the selection of a filler material:

- sensoric properties,
- reaction with other recipe components,
- additional benefit that can be attained and
- price level.

A filler material ideally fulfilling expectations is the high-purified powder cellulose. This material has been used for a long time in various foods as well as in the pharmaceutical field (particularly in the USA). In Europe the use of powder cellulose is regularized by the classification as an additive (4). Therefore, it has an E-number, which may cause negative associations by the consumer in its declaration in the list of additives. With the novel Vitacel wheat fiber the company J. Rettenmeier & Söhne now offers a product, whose functional properties correspond to those of a highly purified powder cellulose.

Applications
Wheat fibers are framework-forming substances of the wheat plant. They are extracted from the raw wheat material by a special thermal-physical process while maintaining the technologically important fibrous structure (3).

Regarding its composition, the Vitacel wheat fiber is superior to conventional fillers by the combination of cellulose, hemicelluloses and lignin. The product contains almost 98 percent of dietary fibers valuable in terms of nutrition physiology. The wheat fiber is classified as a food and must therefore not be defined by an E-number. It is characterized by the following properties:

- bright color,
- neutral taste and odor,
- temperature and pH stability,
- inert behavior towards other components of the recipe,
- no influence on caloric calculations,
- manufacture of natural raw materials.

In the course of the "Öko-Audit" regulation manufacturers of food increasingly try to reduce the number of additives that must be declared in the list of additives besides reducing the number of E-numbers. This provides the consumer with a better insight and leads to more confidence in the food or manufacturer.

Example of application: Dehydrated soups
Caused by the high content of dietary fibers of the wheat fiber, a reduction of the calorific value is achieved when used in dehydrated soups while at the same time enhancing the value in terms of nutrition physiology. It is also possible to directly apply flavor additives and colorings onto the fiber, thus increasing its use as a carrier material. At the same time, the fiber-inherent capillary effect may cause a reliable anti-caking effect and a later dispersion can be supported. Due to the low apparent weight of different wheat fibers the desired product volume can also be adjusted.

During dispersion, the fibers absorb aqueous and oily solutions. The swelling of the insoluble wheat fibers connected therewith causes a pleasant feeling in the mouth of the consumer. At the same time, an increase in viscosity and texture is achieved, which is especially desired in products that shall have a "chunky" character, such as asparagus crème soup or tomato soup. Besides the use in dehydrated soups, wheat fibers are also suitable for other applications. The table shows some of the further applications and the additional use connected therewith.

Summary
Besides their effect as filler material, this novel wheat fiber offers a variety of technologically and nutrition-physiological advantages. Due to its multi-functional properties and the high microbial purity it can universally also be used in "problematic" food.

Table: Applications of Vitacel and advantages connected therewith

Application	Additional advantage
Slimming products	- reduction of calories/ accumulation of dietary fibers - improvement in texture - dispersion aid - anti-caking effect - volume adjustment
Spices, flavors, extracts	- carrier material - improved stability of the flavors by capillary effect - improved trickling ability
Meat and sausage products	- reduction of calories/accumulation of

	dietary fibers - improved water and fat bonding - support of the effect of emulsifiers - prevention of separation - a_γ-value reduction
Breadings	- improved stability of the dry breading by fiber reinforcement - fat absorption of the breadings
Pastries, wafers etc.	- reduction in calories/dietary fiber accumulation - higher yield - less cracking - less abrasion - improved freshness

Literature

(1) Thomas, B.: Beeinflussung des Stoffwechsels durch Ballaststoffe, 1977, Suppl. 2, pp 61 – 66

(2) G.-W. von Rymon Lipinski, E. Lück Taschenbuch für Lebensmitteltechnologen und Chemiker, vl. 1 Springer-Verlag

(3) Adrians, R. Bollinger, H.: Natürliche Rieselhilfe-Weizenfasern, Die Ernährungsindusrie, 3/95

(4) *§ 2 LMBG, paragraph 1*

(Illustration: Wheat fibers are classified as food and must therefore not be classified by an E-number)

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